Education Updates in Maple 2026

Maple 2026 strengthens its support for teaching and learning mathematics with enhanced tools that help students develop their understanding through feedback, practice, and guided solutions.

Check My Work: Guided Feedback

Understanding mistakes is often more valuable than simply seeing the correct answer.

Maple's Practice and Feedback commands analyze a student's worked solution and provide feedback on each step, not just the final result. Maple 2026 improves the underlying algorithms to recognize more problem types and interpret student reasoning more accurately.

Expressions containing Integrals or Derivatives

Previously IntPractice and DiffPractice required the input be an integral or derivative, not an expression with one part being an integral or derivative. Expressions with embedded integrals and derivatives are now handled:

Example: Integral Sum

$$\mathit{Grading}\text{:-}\mathit{IntPractice}\left(\left(\int -\frac{1}{x^2}\,\mathrm{d}x\right)+4\,x\right)$$

Find this integral

Check My Work

Please fill in your steps line by line.
Click on the button to check your work.

Try Another

$$\int \frac{-1}{x^2}\,dx + 4 \cdot x$$

> New Math Entry Box

Example: Difference of Derivatives

$$Grading\text{:-}DiffPractice\left(Diff\left(\frac{1}{x}, x\right) - Diff(\cos(x), x) \right);$$

Find this derivative

Check My Work

Please fill in your steps line by line.
Click on the button to check your work.

Try Another

$$\frac{d}{dx}\frac{1}{x} - 1 \cdot \left(\frac{d}{dx}\, cos(x)\right)$$

> New Math Entry Box

Improved Handling of Implicit Assumptions

Sometimes steps have an implied context — a student is using rules that are only valid on a certain domain. The result analyzer now takes this into account, allowing these transformations without requiring, for example that x > 0 be stated explicitly when manipulating ln(x).

Example: Log Rules

$Grading\text{:-}Feedback(\ [\ \ln(a) + \ln(b), \ln(a \cdot b)\ ], output = matrix\ );$

$$\begin{bmatrix} \ln(a) + \ln(b) & \text{""} \\ \ln(a\,b) & \text{"Ok, assuming positive"} \\ & \text{""} \end{bmatrix}$$

$Grading\text{:-}Feedback\left(\left[\ \ln(a) - \ln(b), \ln\left(\frac{a}{b}\right)\right], output = matrix\right);$

$$\begin{bmatrix} \ln(a) - \ln(b) & \text{""} \\ \ln\left(\frac{a}{b}\right) & \text{"Ok, assuming positive"} \\ & \text{""} \end{bmatrix}$$

$Grading\text{:-}Feedback(\ [\ \ln(a^b), b \cdot \ln(a)\ ], output = matrix\ );$

$$\begin{bmatrix} \ln(a^b) & \text{""} \\ b\,\ln(a) & \text{"Ok, assuming positive"} \\ & \text{""} \end{bmatrix}$$

$Grading\text{:-}Feedback(\ [\ \%log[a](a^b)\ , b\ ], output = matrix\ );$

$$\begin{bmatrix} \log_a(a^b) & \text{""} \\ b & \text{"Ok, assuming positive"} \\ & \text{""} \end{bmatrix}$$

Expanded Context Support in Student Solutions

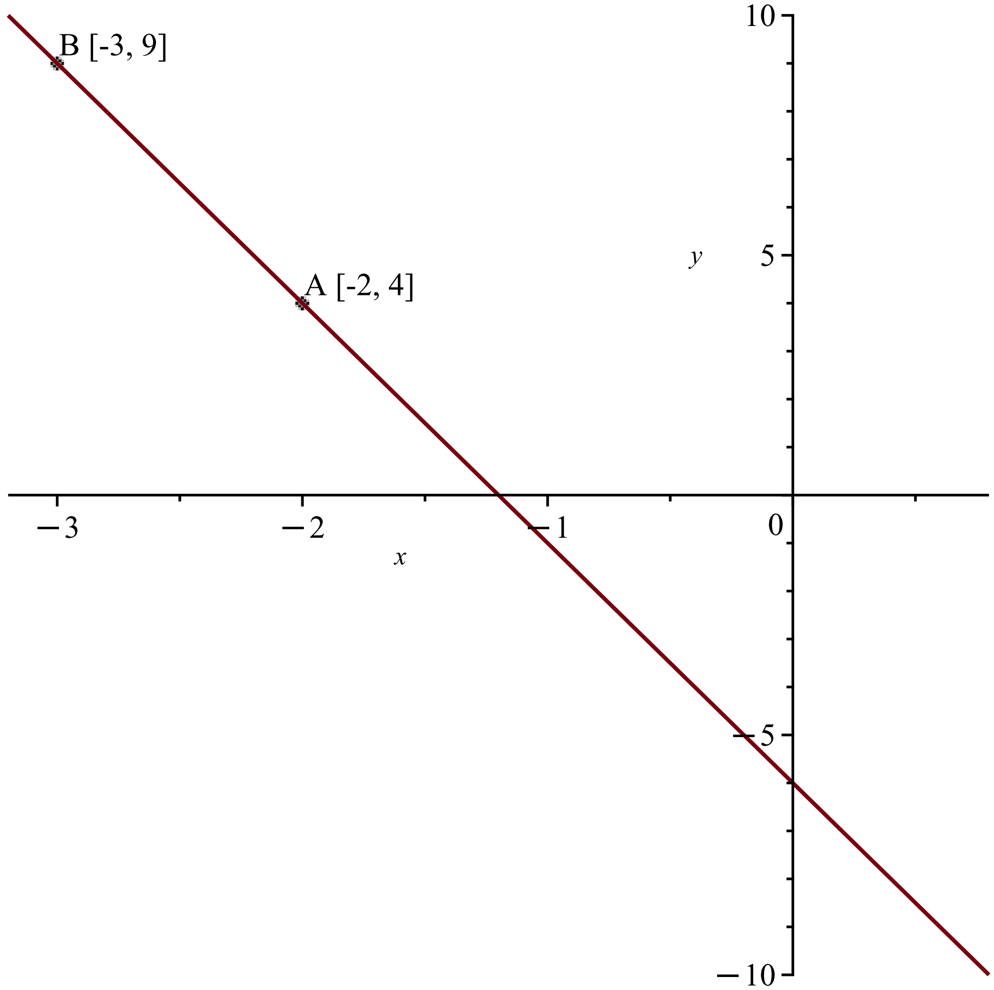
Sometimes a student response contains information that is outside the context of the expressions given to SolvePractice. For example, in the following example, the coordinates of the points (-2,3) and (-3,9) are shown on the graph, but not mentioned in practice question. The feedback algorithm now sees the assignment of values to variables, and allows them as long as they don't contradict any previous or subsequent use of those variables.

Example: Reference to Formula and Point Substitution

```
with(geometry) :

line(L, [point(A, -2, 4), point(B, -3, 9)], [x, y]) :

plots[display](
  plots[pointplot]([coordinates(A), coordinates(B)]),
  plots[textplot]({[op(coordinates(A)), cat("A ", coordinates(A))], [op(coordinates(B)), cat("B ",
    coordinates(B))]}, 'align' = {'above', 'right'}),
  plots[implicitplot](Equation(L), x = -10..10, y = -10..10)
);
```



Grading:-*SolvePractice*(y = s·x + b, text = "Find the equation of the line intersecting points A and B", tryanother = false);

Find the equation of the line intersecting points A and B

Check My Work

Please fill in your steps line by line.
Click on the button to check your work.

$y = sx + b$

> New Math Entry Box

Try Another: Generating Practice Problems

Instructors and students have long wanted an easy way to generate questions similar to the ones they're working on. Creating meaningful variations that preserve the structure and intent of the original problem is not always straightforward.\

In previous versions of Maple, we took our first step toward solving this with the GenerateSimilar command, which generates a new random expression with properties similar to a given one. For example, if you input a quadratic with integer coefficients and integer roots, GenerateSimilar will produce a new expression that shares those characteristics.

With Maple 2026, we've expanded this capability to include many more kinds of expressions, and improved the controls over coefficient scaling, especially when repeatedly generating new expressions based on the previously generated ones.

$$RandomTools{:-}GenerateSimilar\left('\int_1^5 \left(x^2 - 16\,x - 2\sqrt{5\,x}\right) \mathrm{d}x' \right);$$

$$\int_4^9 \left(-49\,x - 6\sqrt{2\,x}\right) \mathrm{d}x$$

$$RandomTools{:-}GenerateSimilar(\ \%\ );$$

$$\int_4^7 \left(-99\,x + 36\sqrt{x}\right) \mathrm{d}x$$

$RandomTools{:-}GenerateSimilar(\ \%\ );$

$$\int_{3}^{4} \left(-49\,x + \frac{3\sqrt{x}}{2}\right) \mathrm{d}x$$

Here is an example that preserves the input in vertex-form, and has integer roots

$Student{:-}Precalculus{:-}CompleteSquare(\ (x+1)\cdot(x-4)=0\ );$

$$\left(x - \frac{3}{2}\right)^2 - \frac{25}{4} = 0$$

$RandomTools{:-}GenerateSimilar(\ \%\ );$

$$\left(x - \frac{7}{2}\right)^2 - \frac{121}{4} = 0$$

$solve(\%);$

$$9, -2$$

This polynomial has a common factor, and so should the new one

$a := 2\,x^2 + 4\cdot x + 20$

$$a := 2\,x^2 + 4\,x + 20$$

$RandomTools{:-}GenerateSimilar(\ a\ );$

$$3\,x^2 + 9\,x + 252$$

A cubic equation that contains a sum or difference of cubes should produce another sum or difference of cubes.

$RandomTools{:-}GenerateSimilar(\ x^3 + 8\ );$

$$x^3 + 27$$

$factor(\%);$

$$(x+3)\,(x^2 - 3\,x + 9)$$

$RandomTools{:-}GenerateSimilar(\ x^3 - 8\ );$

$$x^3 - 64$$

$factor(\%);$

$$(x-4)\left(x^2+4x+16\right)$$

Support has been added for nested trig functions

$RandomTools:\text{-}GenerateSimilar\left(\text{'}\cos\left(\arccos\left(-\frac{\sqrt{3}}{2}\right)+\frac{\pi}{6}\right)\text{'} \right);$

$$5\sin\left(-\arccos\left(-\sqrt{5}\right)-\frac{5\pi}{4}\right)$$

Step-by-Step Solutions

Maple 2026 improves the existing suite of commands for showing step-by-step solutions to standard mathematics problems.

Maple’s step-by-step solutions are highly regarded and widely used across Maple, Maple Calculator, and Maple Learn. We regularly receive valuable feedback from users across all platforms, and Maple 2026 incorporates significant updates and refinements based on that input.

Expanded Simplification and Solving Steps

Maple 2026 expands the breadth of expressions for which step-by-step simplification is available. In particular, it now handles expressions involving nested and multiple logarithms and exponentials that were not previously supported.

$expression := e^{\left(\frac{\ln(3)}{2}-\frac{\ln(7)}{2}\right)}$

$$expression := e^{\frac{\ln(3)}{2}-\frac{\ln(7)}{2}}$$

$Student:\text{-}Basics:\text{-}SimplifySteps(\ expression\ );$

Let's simplify

$e^{\frac{\ln(3)}{2} + \frac{-1}{2} \cdot \ln(7)}$

- Multiply

$e^{\frac{\ln(3)}{2} + \frac{-\ln(7)}{2}}$

- Examine subexpression: $\frac{\ln(3)}{2} + \frac{-\ln(7)}{2}$
  - Apply log rule a*log(x) = log(x^a)

  $\left(\ln\left(\sqrt{3}\right)\right) + \left(\ln\left(7^{-\frac{1}{2}}\right)\right)$
  - Apply log rule log(a) + log(b) = log(a*b)

  $\left(\ln\left(\frac{\sqrt{3}\,\sqrt{7}}{7}\right)\right)$

This gives

$e^{\ln\left(\frac{\sqrt{3}\,\sqrt{7}}{7}\right)}$

- Evaluate $e^{\ln\left(\frac{\sqrt{3}\,\sqrt{7}}{7}\right)}$

$\frac{\sqrt{3}\,\sqrt{7}}{7}$

- Multiply roots

$\frac{\sqrt{21}}{7}$

Maple’s computational algorithms are optimized for speed, breadth, and efficiency. The step-by-step commands, however, are designed to mirror how a student might approach a problem. Because these approaches serve different purposes, the result returned by a computational command may not always look the same as the result shown in a step-by-step solution, even though they are mathematically equivalent.

To reduce this potential confusion, Maple 2026 strengthens the internal use of SimplifySteps to bridge to the expected final result when possible. This helps ensure that the step-by-step solution and the computational result agree.

In the following example, SolveSteps natively arrives at an answer involving *ln* constants, which is then simplified to a *sqrt* fraction with steps generated by SimplifySteps.

$Student:-Basics:-SolveSteps\left(\ln\left(\frac{1}{x}\right) + \ln(7\,x^3) = \ln(3)\right);$

Let's solve

$$\ln\left(\frac{1}{x}\right) + \ln(7 \cdot x^3) = \ln(3)$$

- Apply log rule: $\ln(X^N) = N \ln(X)$

  $$(-1) \cdot \ln(x) + \ln(7\,x^3) = \ln(3)$$

- Apply log rule: $\ln(X\,N) = \ln(N) + \ln(X)$

  $$(-1) \cdot \ln(x) + \ln(7) + \ln(x^3) = \ln(3)$$

- Apply log rule: $\ln(X^N) = N \ln(X)$

  $$(-1) \cdot \ln(x) + \ln(7) + 3 \cdot \ln(x) = \ln(3)$$

- Evaluate subtraction and addition

  $$2 \ln(x) + \ln(7) = \ln(3)$$

- Subtract $\ln(7)$ from both sides

  $$2 \cdot \ln(x) + \ln(7) - \ln(7) = \ln(3) - \ln(7)$$

- Simplify

  $$2 \cdot \ln(x) = \ln(3) - \ln(7)$$

- Divide both sides by 2

  $$\frac{2 \cdot \ln(x)}{2} = \frac{\ln(3) - \ln(7)}{2}$$

- Simplify

$$\ln(x) = \frac{\ln(3)}{2} - \frac{\ln(7)}{2}$$

- Raise both sides to a power of e

$$e^{\ln(x)} = e^{\frac{\ln(3)}{2} - \frac{\ln(7)}{2}}$$

- Log rule: $e^{\ln(X)} = X$

$$x = e^{\frac{\ln(3)}{2} - \frac{\ln(7)}{2}}$$

- Simplify

$$x = e^{\frac{\ln(3)}{2} - \frac{\ln(7)}{2}}$$

- Examine subexpression: $\frac{\ln(3)}{2} - \frac{\ln(7)}{2}$
  - Apply log rule a*log(x) = log(x^a)

    $$\left(\ln\left(\sqrt{3}\right)\right) + \left(\ln\left(7^{-\frac{1}{2}}\right)\right)$$

  - Apply log rule log(a) + log(b) = log(a*b)

    $$\left(\ln\left(\frac{\sqrt{3}\,\sqrt{7}}{7}\right)\right)$$

  This gives

  $$x = \frac{\sqrt{3}\,\sqrt{7}}{7}$$

- Evaluate $e^{\ln\left(\frac{\sqrt{3}\,\sqrt{7}}{7}\right)}$

$$x = \frac{\sqrt{3}\,\sqrt{7}}{7}$$

- Multiply roots

  $x=\frac{\sqrt{21}}{7}$

- Check if $x=\frac{\sqrt{21}}{7}$ satisfies domain requirements

  - Domain requirement from $\frac{1}{x}$: cannot divide by 0

    $x \neq 0$

  - Substitute $x=\frac{\sqrt{21}}{7}$ into 1 and evaluate

    $\frac{\sqrt{21}}{7}$

  - Evaluate

    0.6546536709

  - Domain requirement met

    $0.6546536709 \neq 0$

  - Domain requirement from $\ln(7 \cdot x^3)$, cannot take log of a negative number

    $0 \leq 7 \cdot x^3$

  - Substitute $x=\frac{\sqrt{21}}{7}$ into $7 \cdot x^3$ and evaluate

    $7 \cdot \left(\frac{\sqrt{21}}{7}\right)^3$

  - Evaluate exponents

    $7 \cdot \left(\frac{3\sqrt{21}}{49}\right)$

- Evaluate multiplication and division

  $\frac{3\sqrt{21}}{7}$

- Evaluate

  1.963961012

- Domain requirement met

  $0 \leq 1.963961012$

- Domain requirement from $\ln\left(\frac{1}{x}\right)$, cannot take log of a negative number

  $0 \leq \frac{1}{x}$

- Substitute $x = \frac{\sqrt{21}}{7}$ into $\frac{1}{x}$ and evaluate

  $\frac{1}{\frac{\sqrt{21}}{7}}$

- Evaluate multiplication and division

  $\frac{\sqrt{21}}{3}$

- Evaluate

  1.527525232

- Domain requirement met

  $0 \leq 1.527525232$

  Therefore the domain requirement is satisfied.

  ✓

- Substitute solution into equation and check if left-side = right-side

  $\ln\left(\frac{\sqrt{21}}{3}\right) + \ln\left(\frac{3\sqrt{21}}{7}\right) = \ln(3)$

- left-side = right-side

  $\ln(3) = \ln(3)$

- $x = \frac{\sqrt{21}}{7}$ satisfies all the domain requirements and left-side = right-side, it is a solution

  ✓

- Solution

  $x = \frac{\sqrt{21}}{7}$

Support has been added to SolveSteps to handle more equations where the variable is in the exponent, such as the following:

$Student:-Basics:-SolveSteps(3\verb|^|(2*x-2) - 3\verb|^|x = 0);$

Let's solve

$3^{2\cdot x-2} - 1\cdot 3^x = 0$

- Add 3^x to both sides

  $3^{2x-2} - 3^x + 3^x = 0 + 3^x$

- Simplify

  $3^{2x-2} = 3^x$

- Exponents have the same base; equate exponents

  $2x - 2 = x$

- Add $2 - x$ to both sides

  $2x - 2 + (2 - x) = x + (2 - x)$

- Simplify

  $2x - x = 2$

- Add terms

  $x = 2$

Step-by-Step Factorization Beyond Integer Factors

Maple's factor command factors a polynomial over the field implied by its coefficients. For example, when all coefficients are integers, factor returns irreducible factors with integer coefficients. As a result, the output does not necessarily break the polynomial into linear factors.

Previously, FactorSteps followed this same model. In Maple 2026, FactorSteps has been enhanced to go further: when appropriate, it now includes use of the quadratic formula as an intermediate step, allowing the factorization to proceed to linear factors with non-integer coefficients — even when the original polynomial has only integer coefficients.

$Student:-Basics:-FactorSteps(x^2 - 7\cdot x + 9);$

$x^2 - 7 \cdot x + 9$

- 1. Use the quadratic formula to find the roots
  - Rewrite in standard form

    $x^2 - 7\,x + 9$
  - The quadratic formula

    $$x = \frac{(-b) \pm \left(\sqrt{b^2 - 4 \cdot (2\,x^2 + 4\,x + 20) \cdot c}\right)}{2 \cdot (2\,x^2 + 4\,x + 20)}$$
  - a = 1, b = −7, c = 9

    $$x = \frac{7 \pm \left(\sqrt{(-7)^2 - 4 \cdot 1 \cdot 9}\right)}{2 \cdot 1}$$
  - Solution using the positive square root is $2\,x - 7 - \sqrt{13}$, this means we found a factor:

    $$x = \frac{7}{2} + \frac{\sqrt{13}}{2}$$
  - Solution using the negative square root is $2\,x - 7 + \sqrt{13}$, this means we found a factor:

    $$x = \frac{7}{2} - \frac{\sqrt{13}}{2}$$
  - Combine the two branches

    $$\left(2\,x - 7 - \sqrt{13}\right) \cdot \left(2\,x - 7 + \sqrt{13}\right)$$

Student:-Basics:-FactorSteps$(x^6 - 3 \cdot x^4 + 2 \cdot x^2)$:

$x^6 - 3 \cdot x^4 + 2 \cdot x^2$

- 1. Common factor x^2

  $x^2 \cdot (x^4 - 3x^2 + 2)$

- 2. Examine term:

  $x^4 - 3x^2 + 2$

- 3. Factor using Trial Evaluations
  - Examine polynomial

    $(x^4 + 0 - 3x^2 + 0 + 2)$

  - The factors of the constant coefficient 2 are:

    $C = \{1, 2\}$

  - Trial evaluations of x in $\pm C$ find $x=1$ satisfies the equation, so $x - 1$ is a factor

    $(x^4 + 0 - 3x^2 + 0 + 2)\Big|_{x=1} = 0$

  - Divide by $x - 1$

$$
\begin{array}{r|l}
 & x^3 \quad + x^2 \quad - 2x \quad - 2 \\
\hline
x - 1 & x^4 \qquad\quad - 3x^2 \qquad\quad + 2 \\
 & \underline{x^4 - x^3} \\
 & x^3 - 3x^2 \\
 & \underline{x^3 - x^2} \\
 & -2x^2 \\
 & \underline{-2x^2 + 2x} \\
 & -2x + 2 \\
 & \underline{-2x + 2} \\
 & 0
\end{array}
$$

  - Quotient times divisor from long division

    $(x^3 + x^2 - 2x - 2) \cdot (x - 1)$

- 4. Examine term:

  $x^3 + x^2 - 2x - 2$

- 5. Factor using Trial Evaluations
  - Examine polynomial

    $(x^3 + x^2 - 2x - 2)$
  - The factors of the constant coefficient -2 are:

    $C = \{1, 2\}$
  - Trial evaluations of x in $\pm C$ find $x = -1$ satisfies the equation, so $x + 1$ is a factor

    $(x^3 + x^2 - 2x - 2)\Big|_{x=-1} = 0$
  - Divide by $x + 1$

$$
\begin{array}{r|l}
 & x^2 \qquad\qquad -2 \\
x+1 & \overline{)\; x^3 \;\; + x^2 \;\; -2x \;\; -2} \\
 & \underline{x^3 + x^2} \\
 & \qquad\qquad -2x - 2 \\
 & \qquad\qquad \underline{-2x - 2} \\
 & \qquad\qquad\qquad 0
\end{array}
$$

  - Quotient times divisor from long division

    $(x^2 - 2) \cdot (x + 1)$
- 6. Examine term:

  $x^2 - 2$
- 7. Use the quadratic formula to find the roots
  - examine quadratic

    $(x^2 + 0 - 2)$
  - The quadratic formula

    $$x = \frac{(-b) \pm \left(\sqrt{b^2 - 4 \cdot (2x^2 + 4x + 20) \cdot c}\right)}{2 \cdot (2x^2 + 4x + 20)}$$
  - a = 1, b = 0, c = -2

    $$x = \frac{0 \pm \left(\sqrt{0^2 - 4 \cdot 1 \cdot (-2)}\right)}{2 \cdot 1}$$

- Solution using the positive square root is $x-\sqrt{2}$, this means we found a factor:

  $x=\sqrt{2}$

- Solution using the negative square root is $x+\sqrt{2}$, this means we found a factor:

  $x=-\sqrt{2}$

- Combine the two branches

  $((x-\sqrt{2})\cdot(x+\sqrt{2}))$

  This gives:

  $(x-\sqrt{2})\cdot(x+\sqrt{2})$

- 8. This gives:

  $(x+1)\,(x-\sqrt{2})\,(x+\sqrt{2})$

- 9. This gives:

  $(x+1)\,(x-1)\,(x-\sqrt{2})\,(x+\sqrt{2})$

- 10. This gives:

  $x^2\,(x+1)\,(x-1)\,(x-\sqrt{2})\,(x+\sqrt{2})$